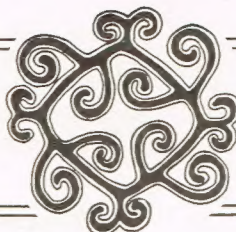


Plant



Wise

Issue #1

Autumn 1989

BOTANICAL DIMENSIONS

What is Botanical Dimensions?

Botanical Dimensions is a non-profit organization dedicated to collecting living plants and surviving plant lore from cultures practicing folk medicine in the tropics worldwide. Ethnobotany is the study of plants used by people: for food, fiber, building and medicine. Ethnomedical plants are those used to prevent and cure illness, to maintain well-being of the body, mind and spirit.

The Motivation

Most of the earth's rural population relies on traditional medicine as a primary source for healthcare. Even in our contemporary industrial culture, thirty-five percent of all modern pharmaceuticals are derived from plants or modeled on plant chemical activity, yet research is just awakening to the enormous potential of botanicals in modern healthcare. Only a tiny fraction of plant species have been investigated for their chemical potential.

Aware of the rich heritage and resource that folk-medicine naturally provides, we also see that a two-fold crisis threatens it: 1) The rampant destruction of native habitats, particularly tropical forests, where there is the richest plant species diversity. 2) The profound disruption of indigenous tropical societies by "development" and the incursions of modern global culture. The very vulnerable web of plant and human interactions that has developed between rainforest people and their environment is perilously endangered. Many individuals can only barely recall how to collect, prepare and administer the plant recipes they saw their grandparents use. Dwellers of the rainforest, acting as guides and informants, have pointed the way toward plants that are anti-malarial, anti-carcinogenic, contraceptive, tranquilizing, immune-stimulating and visionary. Untold numbers of as yet uncollected plant species are being destroyed, or forgotten, or both. The plants still have much

A LETTER FROM THE EDITOR

It is a pleasure to introduce the first issue of our newsletter. As with all good things, it has been a long time coming. Botanical Dimensions, the organization described herein, has been collecting articles, stories and plant data for several years now, with the goal of creating a printed forum such as this. We hope to educate, elucidate, and encourage the readership to greater awareness of the plant world and our intimate human connection with it. Features of PlantWise, as it grows into coming issues, will include: Excerpts from ethnobotanical literature, past and present; notes from those doing work out in the field; profiles of particularly interesting medicinal or shamanic plants; illustrations; a plant chemistry column by Dr. Dennis McKenna; current localities and species of interest for students of ethnobotany; relevant book reviews and access, and articles by or interviews with

luminaries in the field of folk medicine. Of course, we value information from native folk healers, as well as from the trained professionals of our own culture, and look forward to bringing together these points of view. Sometimes stories, myths or philosophy communicate the plants' spirit better than descriptive data, and we hope to present a rich and broad picture for you.

This first issue offers a taste of things to come. If you choose to subscribe or contribute, you will be providing much-needed financial support for the effort to save and study the rare medicinal plants of the tropics worldwide, and we thank you. May we all become wise in the way of the plants.

Sincerely,

Kathleen Harrison McKenna
President, Botanical Dimensions

to teach us, as do the people who have learned from them. We must remember that the shamanic tradition of plant medicine is as fragile as the rainforest itself, and that plant wisdom is a precious gift from our ancestors. Once the people have forgotten the plant wisdom that accompanied their verbal tradition, we have all lost knowledge of great value.

The data without the plants is merely anthropological information. The plants without the data are genetically preserved, but orphaned: it is the legacy of folk understanding that gives us clues to the uses and methods of preparing the plants. For this reason, it is vitally important to collect and preserve diverse genetic stock of folk-medicinal plants. Along with these living collections must be saved the folk-taxonomy, stories, recipes and applications attending each plant species. Botanical Dimensions has focused its attention on the problem of preserving the plants and their valuable folklore, bearing in mind the need to educate and illuminate present and future generations.

Hawaiian Project

Our strategy for dealing with the problem outlined above has been to secure 19 acres of forested land on the island of Hawaii to serve as a botanical garden and gene bank for species of plants important to maintaining human health and spiritual well-being. At Botanical Dimensions our greatest interest lies in the ethnomedical plants of the tropics worldwide. We have field experience with the indigenous people of the Amazon and much of the extensive botanical pharmacopoeia of Amazonian ethnomedicine is under cultivation at the Hawaiian site. We also have an expanding collection of live specimens and data from Pacific, Asian and African cultures.

We attempt to gather various wild and cultivated strains of any given species, in order to keep the gene pool active and diverse. We propagate seeds, cuttings and/or root stock of each species, with the hope of generating enough biomass to enable researchers to work from living or fresh material. BD supports collectors in such places as Peru, Ghana, Belize and Thailand.
(continued next page)

(continued from page one)

It is their mission to collect living medicinal plants and the lore associated with them. The living material is then shipped to the Hawaiian site, where it is catalogued and propagated. Often we receive seeds, cuttings or personal accounts from a growing network of sincere grassroots conservationists.

Living Plant Library

In California we continue our work on a computer database covering each of the species we have collected or are searching for. This database will include scientific description, illustrations, Latin and folk taxonomy, geographical range, current and historical methods of plant usage, known or probable chemistry, and cultural myths related to the origin and identity of each plant. A very time-consuming project, the database requires funding to make it as complete as it can be. We would eventually like to make this software available to interested individuals, as well as institutions. This is a necessary complement to the preservation of living species, providing an information network reaching from the past into the future.

FROM THE FIELD

by
Bret Blosser

One collector who generously writes us letters with tales of his experiences in the field is ethnologist Bret Blosser. Here he tells of time spent in 1986 with a well-respected healer in Belize:

Don Elijo pauses to pull the upper branches of a tall shrub in close to his near-sighted old eyes. "None of that son-of-a-gun skunkwood, none of it," he complains evenly. We've found its mate, but we need skunkwood too. Don Elijo has explained to me that all the medicines work in pairs, male and female. Now I follow his small steps down the shady jungle slope and across the sunbaked main trail to the village where Mayan, mestizo and Creole patients are already waiting around his pole and thatch hut. The Bush Doctor is in. He's feeling the baby's pulses and chanting quietly in Yucatec as the woman goes on about symp-

toms. He tells her which wind it is. There are many. The ant wind bites you all over. Another makes you brag about your great corn crop—deranged behavior. I continue to machete-chop the roots and vines we gathered this morning on the waiting room floor while Don Elijo splits to the bush to find a leaf for the baby.

Don Elijo's cures come down through the ancient Mayan oral tradition or directly from nine Mayan dieties who consult in dreams on difficult cases. Some times the nine show him a plant he's never used before and teach him how to cure with it. Don Elijo is one of the last in the lineage of Mayan priests and healers who honor and work with the nine Lords of the Underworld. He has no apprentices. He is eighty-six. He treats people from all over Central America with sting-ray spine acupuncture, crystal-gazing diagnosis, pulsing, shamanic disease-object extraction, and hundreds of medicinal herbs. (1989 update: Don Elijo is still alive and sharing some of his medicinal knowledge with an ethnobotanist.)

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THE HUMAN DIMENSION

Botanical Dimensions is a non-profit 501(c)3 corporation founded in California in 1985 by Kathleen Harrison Mc Kenna, president, and Terence Mc Kenna, secretary. We are joined on our board of directors by many fine individuals who share our deep interest in plants and the quality of human life.

Board of Directors

Ralph Abraham, PhD., professor of Mathematics, University of California at Santa Cruz, author of *Foundations of Mechanics*, Director of the Visual Mathematics Research Center, UCSC. Considered one of the "fathers" of chaos theory.

Frank Barr, M.D., author, lecturer and Senior Fellow of the Berkeley Institute for the Study of Consciousness.

Luis Eduardo Luna, PhD., Colombian anthropologist teaching at the University of Helsinki, recipient of a Fulbright Scholarship for Amazonian studies, author of *Veg-etalismo: Folk Medicine in the Amazon*.

Nicole Maxwell, Fellow of the Royal Geographical Society, author of *The Witchdoctor's Apprentice*, lived as a field botanist and journalist in South America from 1948 to 1986. She is now with the University of Mississippi.

Kathleen Harrison McKenna, co-founder and president of Botanical Dimensions, is a

botanical illustrator, publisher and mother of two who has traveled widely in the New World tropics.

Terence McKenna, co-founder and secretary-treasurer of Botanical Dimensions, is co-author of *The Invisible Landscape* and wrote *True Hallucinations*. He has traveled throughout the tropics and has lectured in recent years on the importance of preserving and understanding our botanical and shamanic heritage.

Ralph Metzner, PhD., is a clinical psychologist and Dean of the California Institute of Integral Studies in San Francisco. He is the author of numerous books, including *Maps of Consciousness* and *Opening to the Light*, and has recently co-founded the Green Earth Foundation, dedicated to spreading consciousness of Gaia.

Rupert Sheldrake, PhD., is a theoretical biologist who has done extensive fieldwork on the Indian subcontinent. He is the author

of the controversial *A New Science of Life* and *The Presence of the Past*.

Rick Strassman, PhD., is a research scientist at the University of New Mexico School of Medicine, specializing in brain chemistry. **David Tussman** is an attorney who advises non-profit corporations in California.

Advisory Board

In 1988, **Dr. Richard Evans Schultes** of Harvard, the world's pre-eminent ethnobotanist, offered to head our advisory board as an act of support for our work. He is joined by advisor **Dr. Dennis McKenna**, a phytochemist and research associate in neuropharmacology at Stanford and co-author of *The Invisible Landscape*.

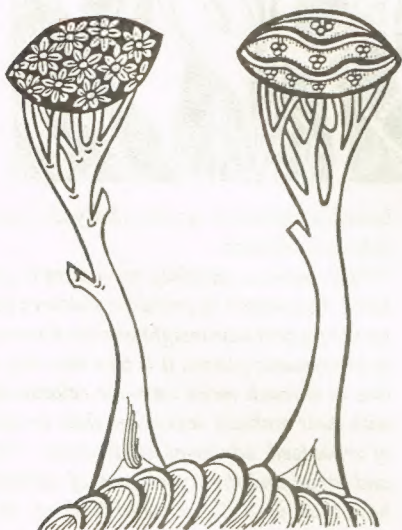
Staff

Our office in California is managed by **Lisa O'Connell**, who spent years in India and has much experience with non-profit operations. **Ken Haven** tends the garden in Hawaii, creating paths, digging holes, and propagating.

EXTRACTIVE FORESTING FEEDS PEOPLE AND SAVES THE PLANTS

"Biological diversity is eroding at a swift pace, and massive losses can be expected if present rates continue. Can steps be taken to slow the extinction process and eventually bring it to a halt? The answer is a guarded "yes." Both developed and developing (mostly tropical) countries need to expand their taxonomic inventories and reference libraries in order to map the world's species and identify hot spots for priority in conservation. At the same time, conservation must be closely coupled with economic development, especially in countries where poverty and high population densities threaten the last of the retreating wildlands. Biologists and economic planners now understand that merely setting aside reserves, without regard for the needs of the local population, is but a short-term solution to the biodiversity crisis. Recent studies indicate that even with a limited knowledge of wild species and only a modest effort, more income can often be extracted from sustained harvesting of natural forest products than from clear-cutting for timber and agriculture."

Excerpted from "Threats to Biodiversity,"
by Edward O. Wilson, *Scientific American*,
September 1989.



Celtic trees from an illuminated manuscript

PlantWise #1

YOU ARE STANDING IN A CHEMICAL ECOLOGY

Excerpted from
"ITS A JUNGLE OUT THERE: BIOCHEMICAL CONFLICT AND
COOPERATION IN THE ECOSPHERE"

by
Dennis J. McKenna, Ph.D.
Whole Earth Review, September 1989

In our day-to-day lives, most of our social interactions consist of encounters with members of our own species. While we may routinely deal with people of different genders, races, cultural backgrounds, or languages, these differences are rather superficial and we are, at bottom, all pretty much the same. If we do have encounters with some species different than ourselves, they are usually either a pet, or something to eat or otherwise exploit; rarely, they may be a threat, especially if they happen to be a pathogenic bacteria or virus. But in general our more complex social interactions go on between members of our own species.

The situation is quite different for a plant. Plants have to deal constantly, and on a more-or-less one-on-one basis, with a whole host of different species, all of which are struggling to secure their own place in the ecosystem. Plants have to compete with other plants, both of their own and of other species, for space, soil nutrients, and sunlight; they have to thwart invasions by armies of pathogenic soil microbes and fungi, and at the same time they have to form beneficial symbioses with others; they have to avoid being eaten by some insects, and they have to coax others into helping out with their pollination and seed dispersal; they have to come to similar terms with herbivores, including intelligent primate herbivores like us. They can manage to survive by being useless but harmless, or they can seek some more complex accommodation that may benefit both parties. On top of all this, plants have to accomplish all of these complex interspecies social interactions without being able to talk or even to move (at least very quickly).

Forced to cope with this situation, it is little wonder that plants have capitalized on their biochemical inventiveness. Lacking a complex behavioural repertoire, plants rely on biosynthesis to mediate their relations with the world around them, and have developed an elaborate chemical vocabulary for that purpose.

Although a plant sitting in a field in the sun or growing in the shade of a forest may not seem to be doing much, do not be deceived by appearances. It is a veritable nerve center of chemical cross-talk. It is using pheromones, growth inhibitors, and metabolic poisons to communicate with other plants, mark its territory, and carry on its sex life; it is using pigments, odors, attractants, repellants, feeding inducers, anti-feedants, and toxins to carry on a complex dialogue with the many insects in its environment, both those it needs to attract for its own symbiotic ends, and those it would just as soon avoid; it is sending a similar barrage of chemical messages to the microbes, fungi, nematodes, and other denizens of the soil near its roots—some it wants to get friendly with, others it wants to drive away, still others it wants to annihilate.

Foraging mammals and other herbivores, all potential consumers of the plant, get similar signals. The plant may need to be approached, or to have certain parts of itself consumed by foragers to complete its life-cycle or to facilitate seed dispersal, and it has chemical strategies to make its accessibility known; in other cases, it just wants foragers to leave it alone, and it has chemicals to broadcast that warning, as well.

In turn, most of the other organisms that are the targets of this chemical barrage have their own store of snappy chemical replies. The nuances that color these chemical conversations have all the subtleties of human interchanges, and the breadth of the topics addressed can be equally wide—ranging from arms negotiations to conspiracy to seduction. All of this chemical communication goes on at the level of a low murmur, and the casual observer is usually oblivious to it (even though he may be participating in it by admiring the color of a flower or enjoying its scent); to him, nothing very much at all seems to be going on.

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TALKING LEAVES Book Review

Where the Gods Reign: Plants and Peoples of the Colombian Amazon, by Richard Evans Schultes, Synergetic Press (P.O. Box 689, Oracle, AZ 85623), 1988. Softcover, 308 pp., 140 b&w photographs, \$20.

This book is a gift from the heart of a great Amazon explorer, the twentieth century's pre-eminent ethnobotanist. Dr. Richard Evans Schultes, Director of the Botanical Museum at Harvard, lived fourteen years during the 1940's and 50's in the northwest Amazon Basin, searching for and identifying medicinal and psychoactive plants and taking photographs of the people who dwell in that forestworld. This book is filled with his sensitive images from the daily life of a culture now slipping away.

Each full-page photo is accompanied by an illustrative quote from one of the other luminaries who has explored the Amazon, with a descriptive paragraph by Dr. Schultes to bring it closer to the reader. Looking at the book, I feel amazed at the beauty and balance those people maintained only forty years ago. Fragile indeed, as we now know.

From **Where the Gods Reign**:

Most of the young men and boys are serious-minded, inquisitive about everything that goes on and, of course, deeply interested in the animals and plants of their surroundings. They make loyal and hard-working helpers to the naturalist and are genuinely interested in the reasons why a naturalist would come to their region from far away to study and collect material. The wise naturalist will listen to their stories and often learn lessons that might easily be missed had he not taken advantage of the knowledge possessed by the Indians.

BOTANICAL DIMENSIONS WISH LIST

Since we are a 501(c)3 non-profit organization, we survive on the goodwill of people (and foundations) who take our project to heart. An inordinate amount of time goes to fundraising; time which would be much better spent with the plants. We are in need of general support in the form of regular or sporadic contributions of funds. An endowment would be very much appreciated. BD still owes \$50,000 on the land, and any angels who want to help us pay it off (thereby avoiding more years of interest) are most welcome.

We also need a 4WD passenger vehicle, a Macintosh computer for the Hawaiian end of the database, a scanner for the plant images in California, plant presses, a chainsaw, free publicity, and gift subscriptions to expensive ethnobotanical journals.

People interested in volunteering could provide help with library research, image collecting, and data entry (on your own Mac?). In Hawaii we can use a semi-annual work crew willing to camp and do serious weeding or digging. A friendly tropical taxonomist would be nice. Please keep sending us relevant articles or well-documented seeds and plant facts from your travels. (Most dried seeds with no fruit may be sent internationally without trouble.) Share this newsletter!

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INFORMATION EXPLOSION

Excerpts from "**PLANTS OF THE GODS**" (Alfred van der Mark, New York, 1979) by Richard Evans Schultes and Albert Hofmann

Information Explosion

The invention of printing and movable type in the middle of the 1400s stimulated the production of herbals, that is, botanical books, mainly on medicinal plants. The so-called Age of Herbals, from about 1470 to 1670, led to the freeing of botany and medicine from the ancient concepts of Dioscorides and other classical naturalists which had held Europe in the bonds of authoritarianism for some sixteen centuries. These two centuries saw more progress in botany than had taken place during the previous millennium and a half.

Far and Wide

Many more hallucinogenic plants exist than those which man has put to use. Of the probable half-million species in the world's flora, only about 150 are known to be employed for their hallucinatory properties. Few areas of the globe lack at least one hallucinogen of significance in the culture of the inhabitants.

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**ALL THE PICTURES MY IMAGINATION
HAD PAINTED IN ANTICIPATION OF
THE IMPRESSION A VIRGIN FOREST
WOULD MAKE ON ME SANK LIKE
FADED SHADOWS INTO INSIGNIFI-
CANCE BEFORE THE SUBLIME
REALITY THAT DISCLOSES ITSELF ON
ENTERING IT!**

Richard Schomburgk, Travels in British
Guiana, (1922)



THE UNKNOWN 90 %

Perhaps ten percent of the Amazonian flora has been analyzed chemically. The antibiotic compounds in the fungi are not at all studied, nor are the bacteria-inhibiting compounds and chemovars in the lichens or the sesquiterpenoids, lactones, ecdysones, alkaloids, and cyanogenic glycosides in the ferns and their allies. The angiosperms are better known, but they too, abound with genera that have never been subjected to phytochemical scrutiny. The need for well-trained ethno-

botanists right now is particularly critical, as Schultes explains:

"While there is certainly no reason to presume that people in primitive cultures possess any particular insight into the discovery of biodynamic plants, it is true that they do live in a much more intimate relationship with their ambient vegetation than do those of urbanized, advanced civilizations. Trial and error and the experience of centuries have built up a rich store of folklore. It is, therefore, a shortcut, as it were, for us today to use to our advantage." Alex Shoumatoff

UPHILL DOWNHILL

by
Kat McKenna

For those of you who have been following or supporting BD for some time now, we offer news of our progress and setbacks in 1989:

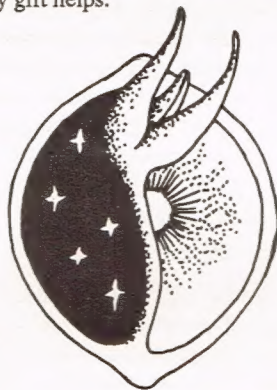
In January we enlarged our living plant collection when director Eduardo Luna delivered to Hawaii a shipment of deep-forest Peruvian plants from collector Francisco Montes. Kat McKenna made a trip to Thailand in search of the elusive *Mitragyna speciosa* and was able to send some back, along with several species from a Bangkok ethnomedical garden. A volunteer work crew dug some much-appreciated holes along the main trail. The Trail, as it has come to be known since it has taken on such park-like beauty, winds through the 19-acre Hawaiian rainforest property that holds the ever-increasing live plant collection. At this writing, 52 species are out of the shadehouse and into the ground along the trail, each provided with suitable light and soil needs, and all doing well. (The shadehouse acts as the nursery for new introductions, often for a year or two.)

The water tank for our rain catchment system, crushed by a falling ohia tree, is now fully repaired and roofed. The 4WD lava road erodes, as roads do, and we were dealt

a serious blow recently when our lifeline—the Jeep Cherokee—was totalled in an accident. Nobody hurt, but access is even more difficult than it was and replacement will be costly, even with insurance. Presently the garden is not open to the public, and visitors are discouraged due to time, budget, personnel and logistical factors.

Many seeds have started to come in from South and Central America, as well as West Africa, and a small network of volunteer germinators is springing up. A professional, Tane Datta of Adaptations on the Kona Coast, is signing on to germinate and keep computerized records. Our database here is getting more complex and thorough, with Dennis McKenna consulting and doing research, for which we need funds.

We recently received a grant from the Fund for the Enhancement of the Human Spirit, a number of individual contributions, and are looking forward to the benefit event in LA in late August. Our budget is still shoestring for the job we are trying to do, and every gift helps.



FRONTIERS OF RESEARCH

Castanospermum australe (family Leguminosae), also known as the Moreton Bay chestnut, contains the compound castanospermine, an alkaloid with anti-viral properties. Analogs are in phase-one clinical trials against AIDS, promising because the compound seems to inhibit replication of the HIV-virus in infected persons. The extract is also effective as a plant-growth inhibitor and reduces tumor growth. Botanical Dimensions has a quantity of the pure extracted compound available for research.

PLANT PROFILE

Croton lechleri (family Euphorbiaceae) is known as "Sangre de Grado" over a large area of the Amazon. The red sap of this tree, which looks like thick blood and remains liquid after harvesting, is favored in Peru for its ability to check bleeding and speed the healing of wounds. On the skin it acts as a liquid bandage, both protecting and healing the wound, and is very effective when ingested for healing ulcers, for hemorrhages, or uterine difficulties. It is known to contain the compound phorbals, which activates protein kinase C. *Croton lechleri* also contains taspine, which is a retro-virus inhibitor. Botanical Dimensions has several healthy specimens of Sangre de Grado and cuttings are being successfully propagated.

PlantWise is a quarterly newsletter published as an educational project of Botanical Dimensions, a non-profit organization. Business office at Botanical Dimensions, P.O. Box 807, Occidental CA 95465. Editor-Kathleen Harrison McKenna, assistant editor-Neil Hassall, office manager-Lisa O'Connell. Subscriptions: \$20/yr., \$25/yr. foreign airmail.

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Yes, I would like to support the work of Botanical Dimensions, and receive four issues of the quarterly newsletter *PlantWise*. Please accept my tax-deductible contribution.
(Make check or money order payable to Botanical Dimensions.)

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PLANTS AND HUMAN EVOLUTION

by Terence McKenna

The impact of hallucinogenic plants on the evolution and emergence of human beings has not been widely examined, yet it promises to provide an understanding of not only primate evolution but also the emergence of the cultural forms unique to Homo sapiens. The adaptive advantage conferred by using immune-stimulating or appetite-

suppressing plants is not difficult to understand. Less obvious is the way in which plant hallucinogens might have provided similar yet different adaptive advantages to our remote ancestors. These compounds do not catalyze the immune system into higher states of activity, although this may be a secondary effect. Rather, they catalyze consciousness, that peculiar, self-reflecting ability that has reached its greatest apparent expression in human beings. One can hardly doubt that consciousness, like the ability to resist disease, confers an immense adaptive advantage on individuals who possess it.



Samara—or winged seed—
of *Banisteriopsis caapi*, the Amazonian vine
that is the basis of the visionary *ayahuasca* brew.

OUR LOGO by Kat McKenna



The swirling botanical mandala that serves as our logo came to us through the intrepid textile collecting done by Mr. Thomas Cole. An expert who has lived many years in various Asian outposts, he often shares his collections of tribal rugs and art with us before trading them away. He came to visit when I was searching for a logo for Botanical Dimensions, carrying with him a set of huge felted wool tentpole caps, heavily appliqued in reds and yellows. The objects come from the Kirghiz, a nomadic people of Soviet Central Asia. The symbol, featured centrally on the textiles, reflects the exuberant love of the plant realm that we also feel here at Botanical Dimensions.

PlantWise
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The motto of Botanical Dimensions is
"to collect, protect, propagate and understand
plants of ethnomedical significance
and their lore."



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